

**Navigation Improvement Study of
the
Upper Mississippi River Near
Savanna Bay, Pool 13**

**Sedimentation and Hydrodynamic
Investigation**

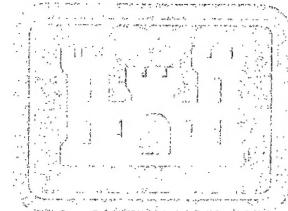
Volume 2 of 2

Mar 98

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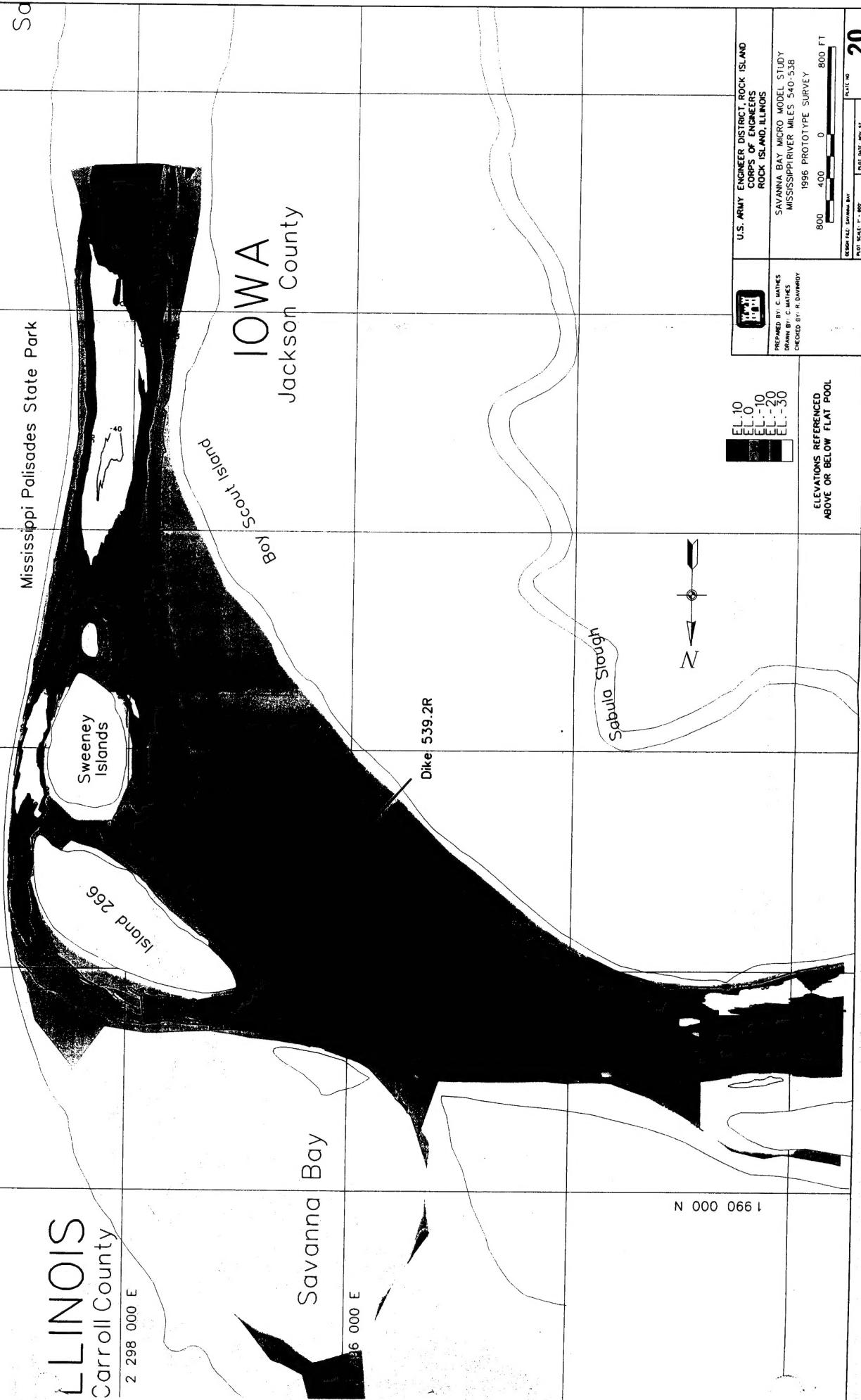
Sweeney Islands

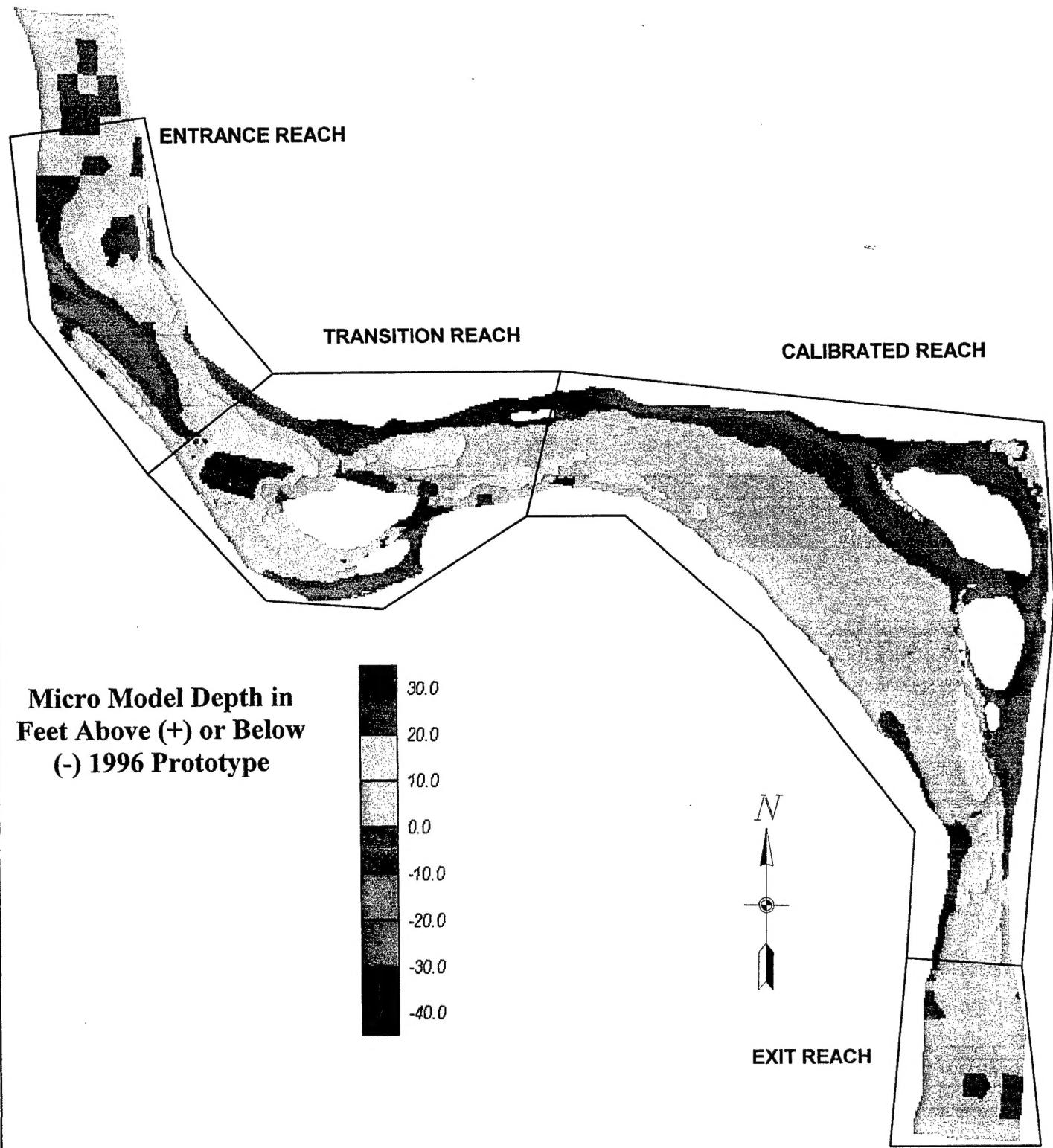
Slide 266

Savanna Bay

36 000 E

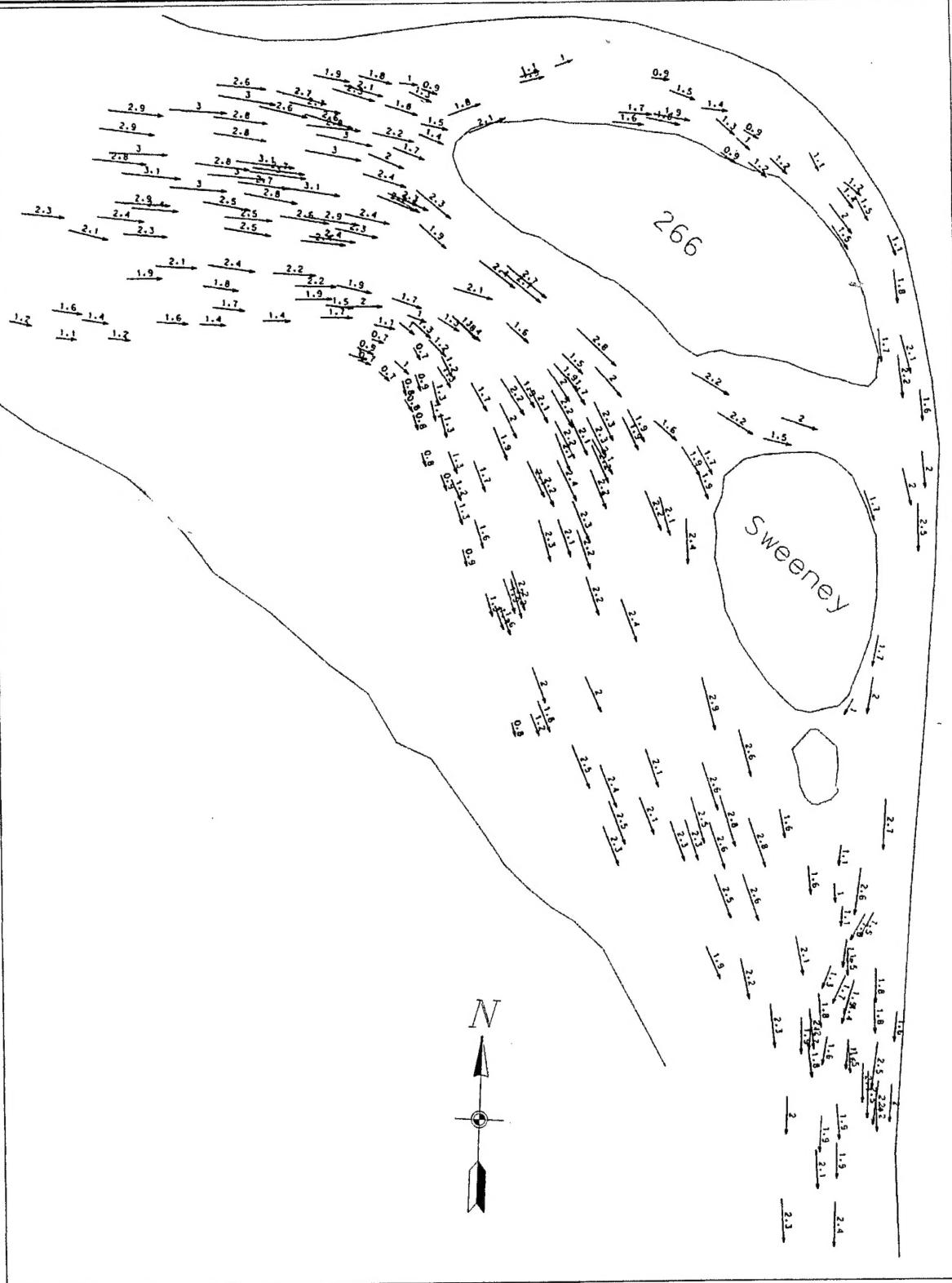
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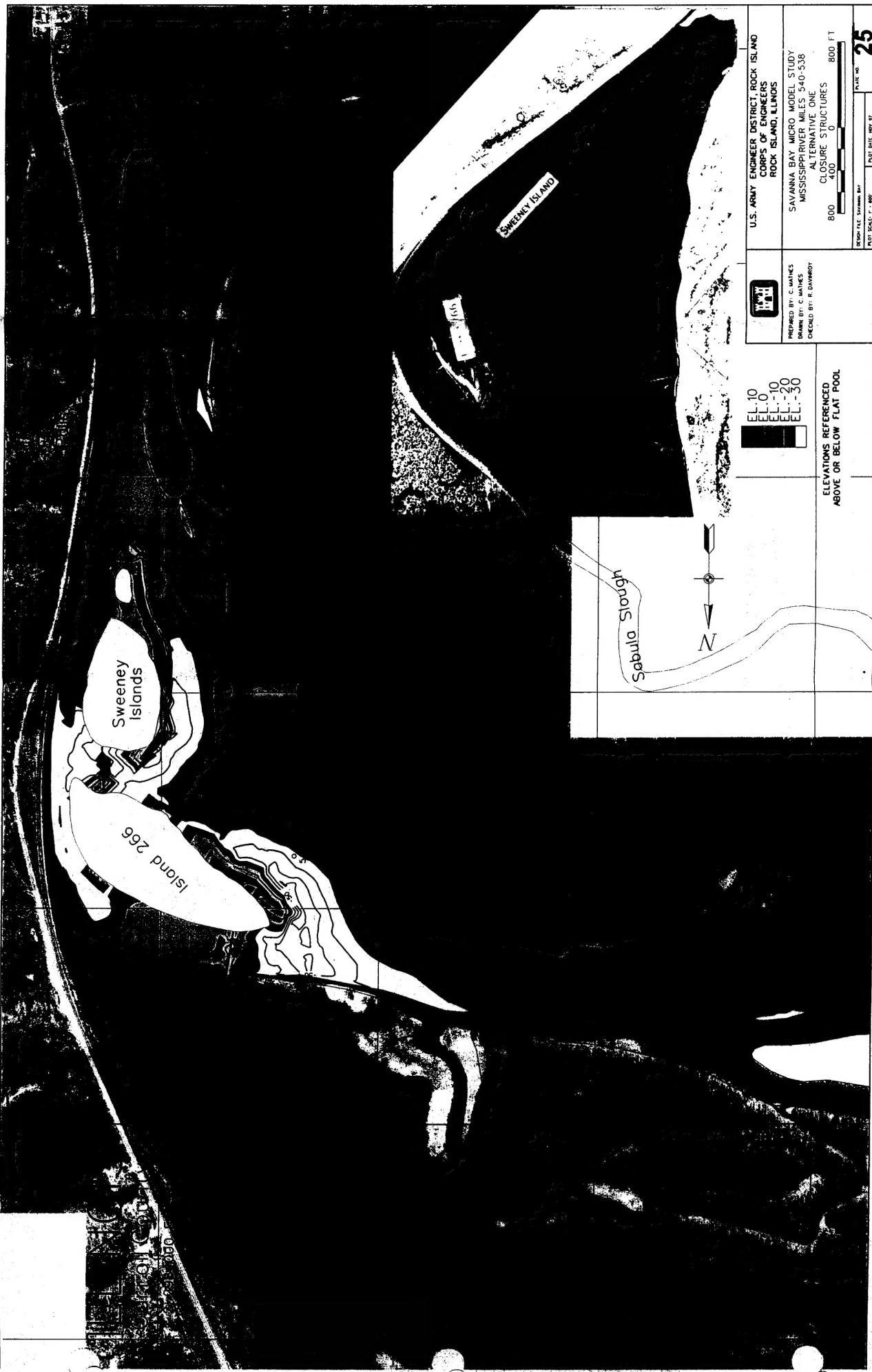


 <small>PREPARED BY: T. Krikeng CHECKED BY: R. Devroy</small>	U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS
	Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13 <u>Comparison of Prototype Bathymetry Versus Micro Model Bathymetry</u>
	PLATE NO. 22





 U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	
PREPARED BY: C. Matthes CHECKED BY: R. Davinroy	Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13 Base Test <u>Micro Model Flow Visualization Velocity Diagram</u>
	PLATE NO. 24





U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND	
CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	
PREPARED BY C. HAWES DRAWN BY C. HAWES CHECKED BY R. DAWBERY	SAVANNA BAY MICRO MODEL STUDY MISSISSIPPI RIVER MILES 540-538 ALTERNATIVE THREE OPTION ONE WITH WINDDAMS
EL-10 EL-10 EL-20 EL-30	800 400 0 800 F T
ELEVATIONS REFERENCED ABOVE OR BELOW FLAT POOL	DESIGN FILE: SAVANNA BAY DATE SCALE: T - 1000 PLATE NO: 27

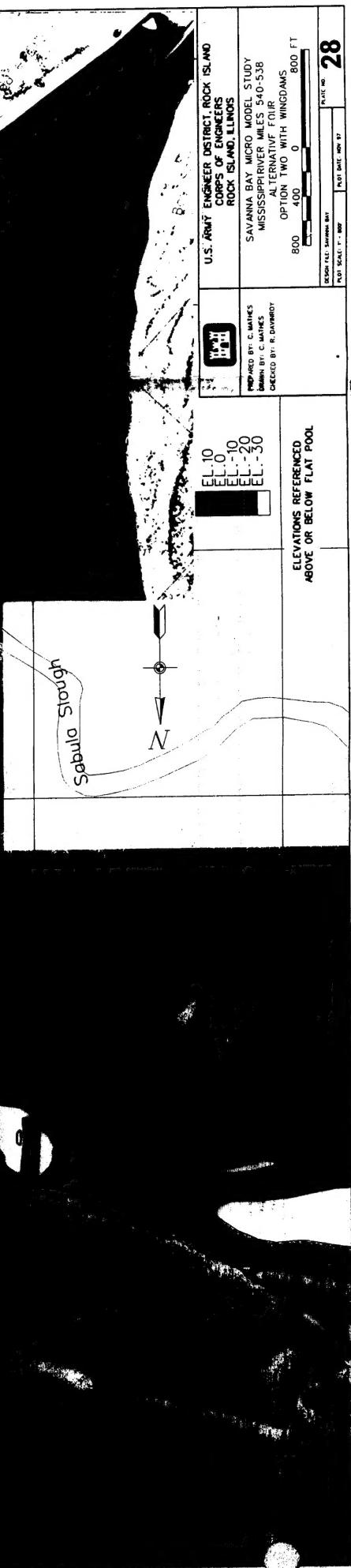


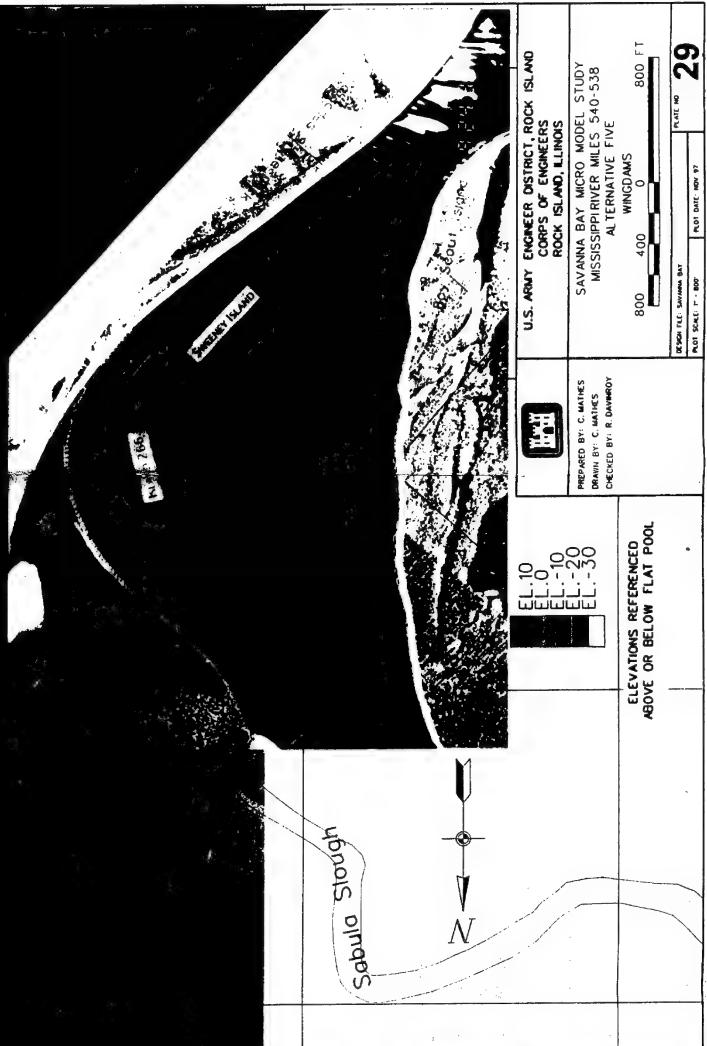
Sabula Slough

Sweeney Islands

ISLAND 266

2000





Sweeney Islands

Island 266





31

229' 7"

U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND	
CORPS OF ENGINEERS	
ROCK ISLAND, ILLINOIS	
SAVANNA BAY MICRO MODEL STUDY	
MISSISSIPPI RIVER MILES 540-558	
ALTERNATIVE EIGHT	
THREE BAR Dikes	
EL 10 EL 0 EL -10 EL -20 EL -30	800 400 0
800 FT	
800 FT	

REVISION SAVANNA BAY	PLAT SCALE 1:25,000	PLAT DATE MAY 91	PLAT NO. 32
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Sabula Slough

Sweeney Islands

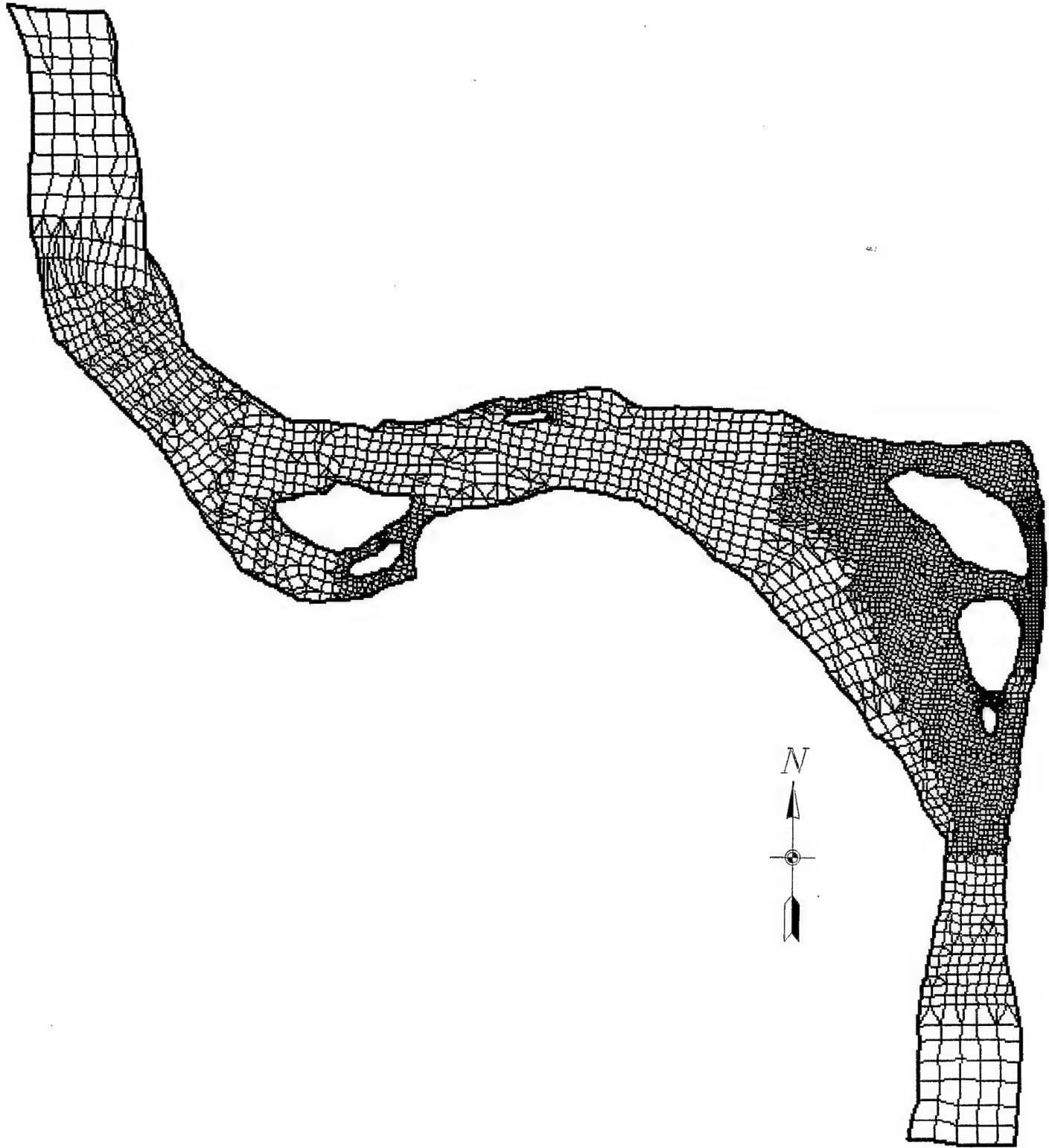
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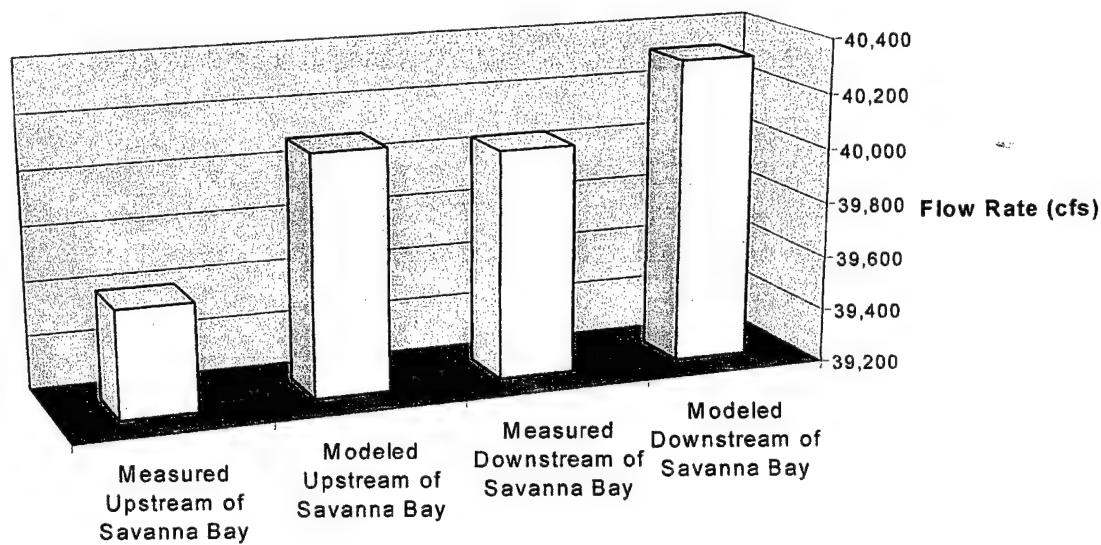




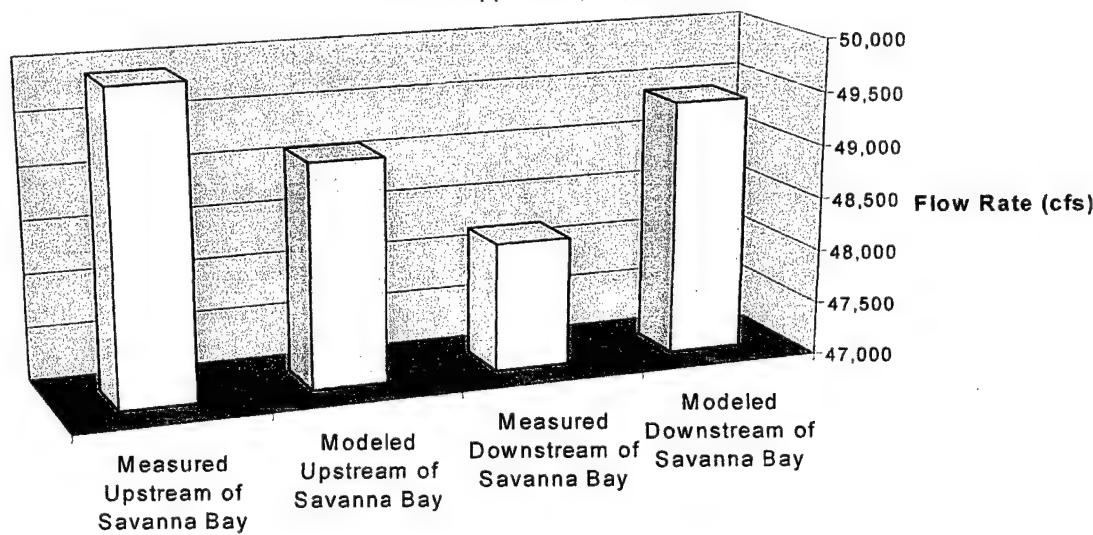


	<p>U.S ARMY ENGINEER DISTRICT, ROCK ISLAND CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS</p>
PREPARED BY: T. Kirkeng CHECKED BY: R. Davroy	Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13 <u>Finite Element Grid, SMS Model</u>
	PLATE NO.
	36

Main Channel
Savanna Bay Flow Measurements vs. SMS Modeling Results
 Mississippi River, 40,000 cfs

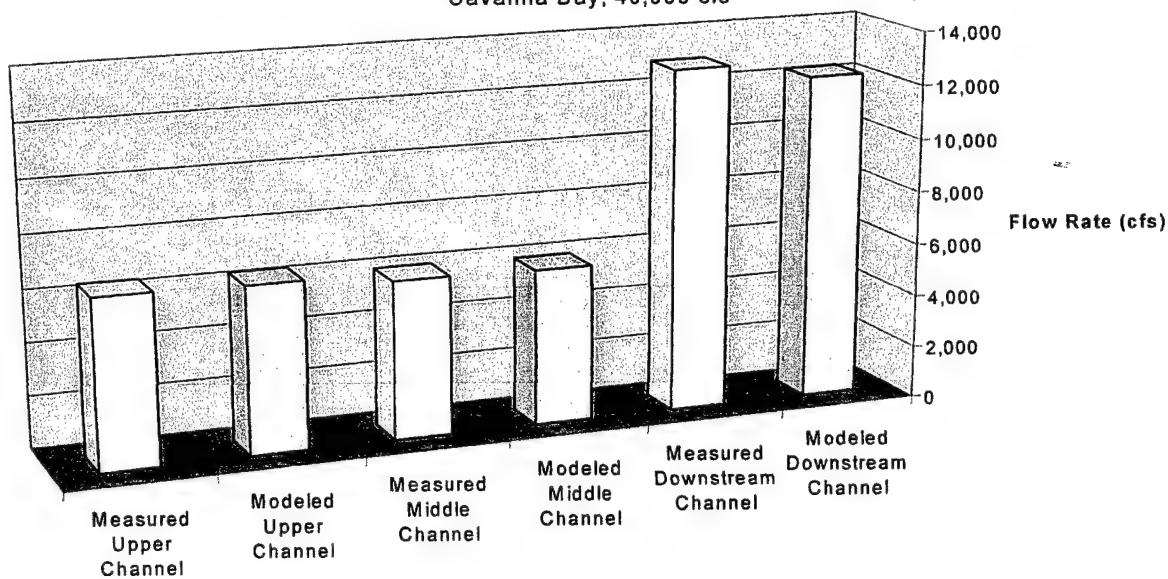


Main Channel
Savanna Bay Flow Measurements vs. SMS Modeling Results
 Mississippi River, 49,000 cfs

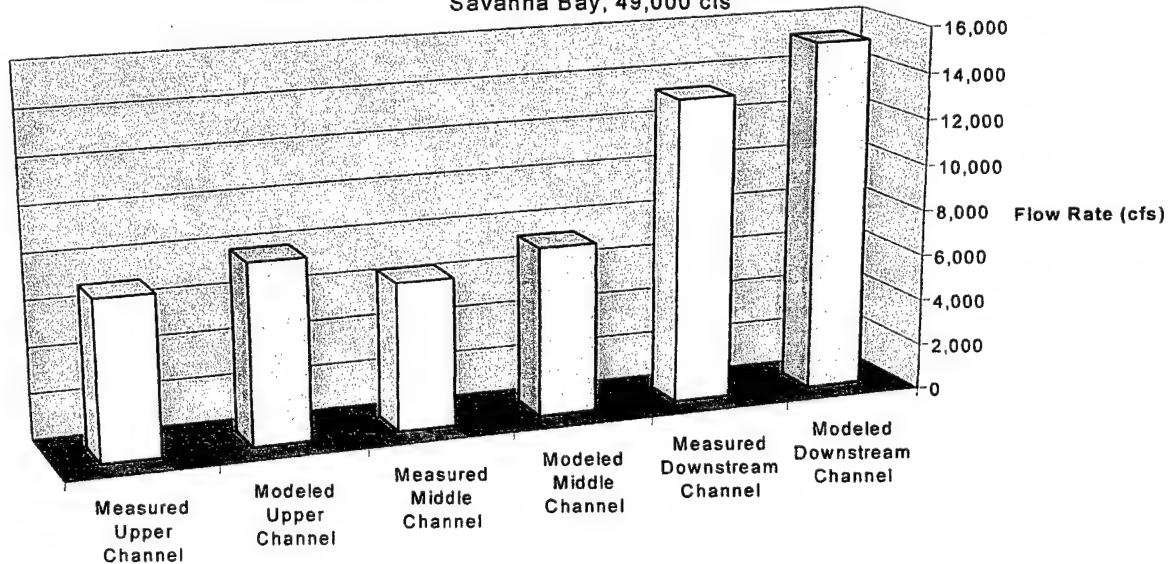


 <small>PREPARED BY: T. Kirkeeng CHECKED BY: R. Davinoy</small>	U.S. ARMY ENGINEER DISTRICT, ROCK ISLAND CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS	
	Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13 <u>Main Channel</u> <u>Measured Flow vs. SMS Modeling Results</u>	PLATE NO.
		37

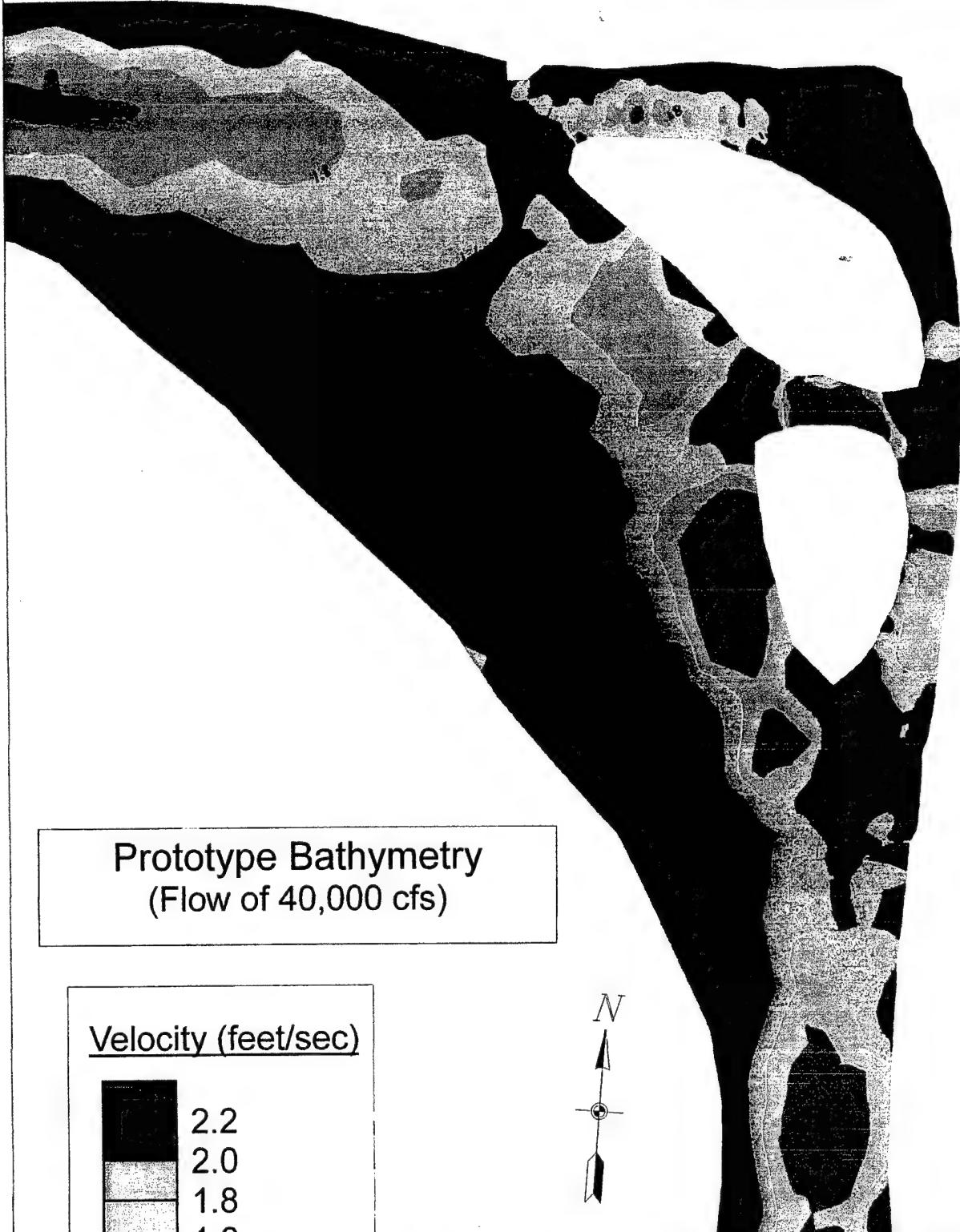
Side Channel Openings
Savanna Bay Flow Measurements vs. SMS Modeling Results
 Savanna Bay, 40,000 cfs



Side Channel Openings
Savanna Bay Flow Measurements vs. SMS Modeling Results
 Savanna Bay, 49,000 cfs



 <small>PREPARED BY: T. Kirkeeng CHECKED BY: R. Davinay</small>	U.S ARMY ENGINEER DISTRICT, ROCK ISLAND CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS
<small>Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13</small>	
<u>Side Channel Openings</u> <u>Measured Flow vs. SMS Modeling Results</u>	
PLATE NO.	
38	



Prototype Bathymetry
(Flow of 40,000 cfs)

Velocity (feet/sec)



2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6



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CHECKED BY: R. Deviney

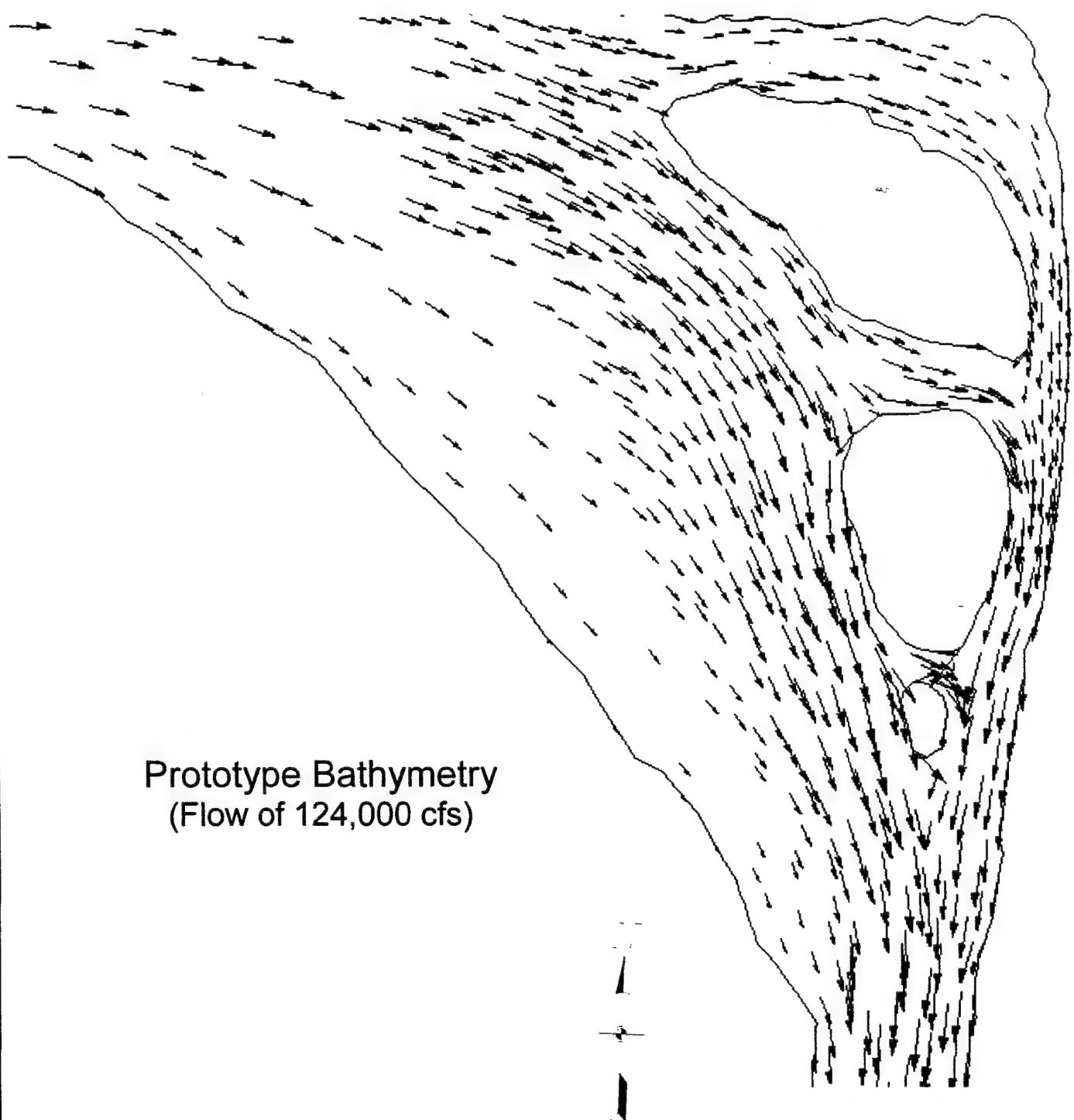
Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth Averaged Velocity Contours,
SMS Model

PLATE NO.

39

Prototype Bathymetry
(Flow of 124,000 cfs)



Vector Velocity Scale:
→
5 feet/sec



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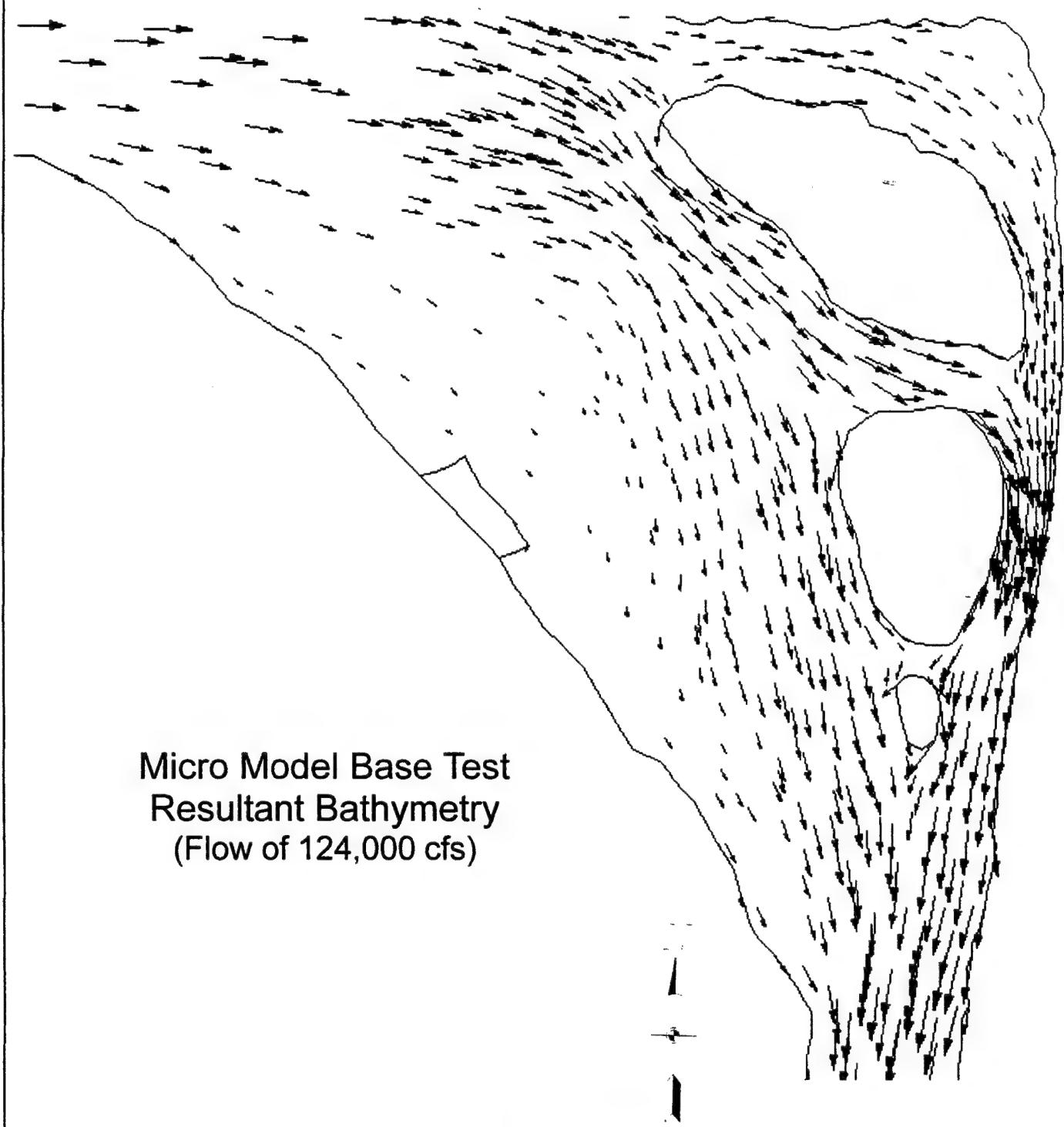
PREPARED BY: T. Kakeeng
CHECKED BY: R. DAWLEY

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

40



Micro Model Base Test
Resultant Bathymetry
(Flow of 124,000 cfs)

Vector Velocity Scale:
→
5 feet/sec



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PREPARED BY: T. Krikeng
CHECKED BY: R. Darrow

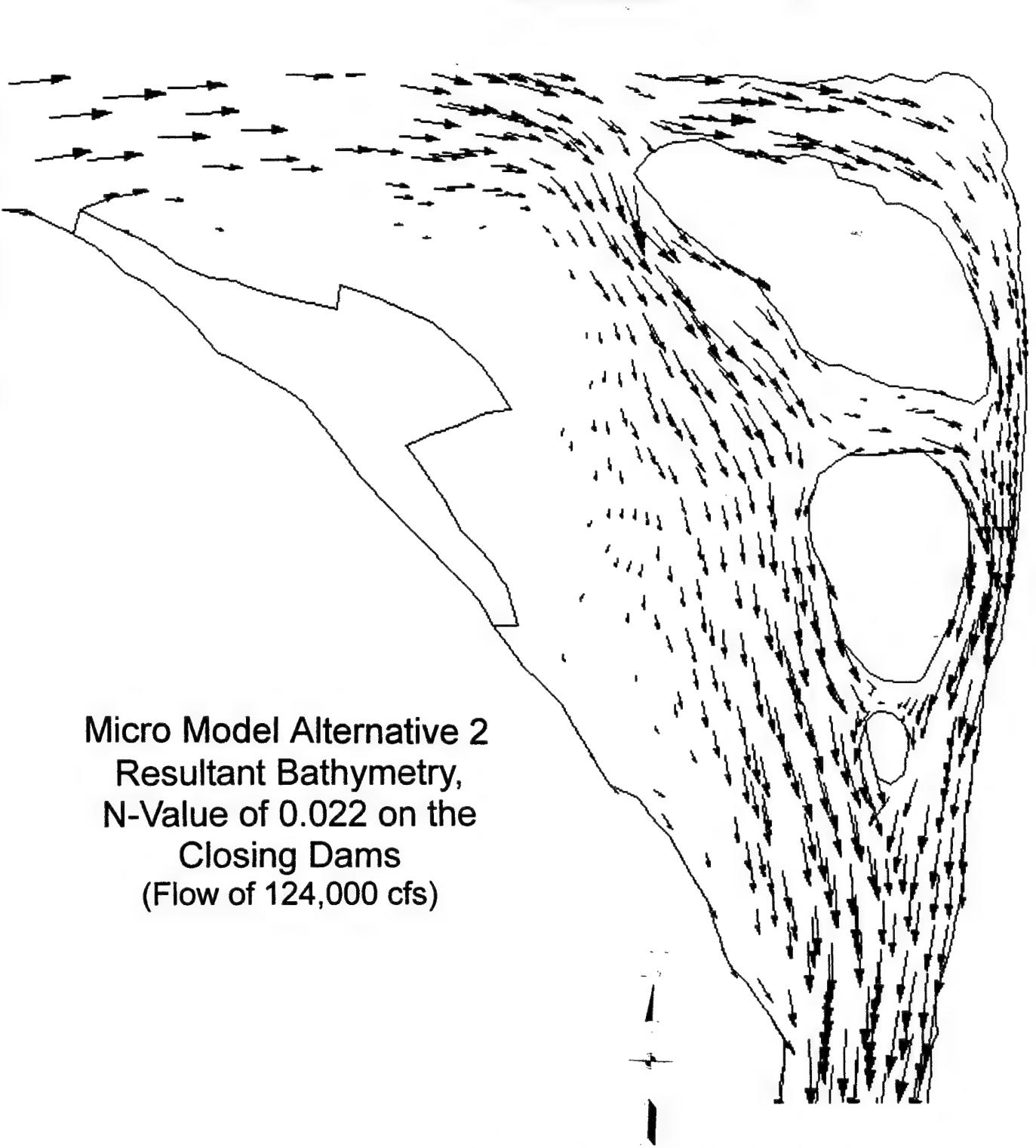
Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

41

Micro Model Alternative 2
Resultant Bathymetry,
N-Value of 0.022 on the
Closing Dams
(Flow of 124,000 cfs)



Vector Velocity Scale:
→
5 feet/sec



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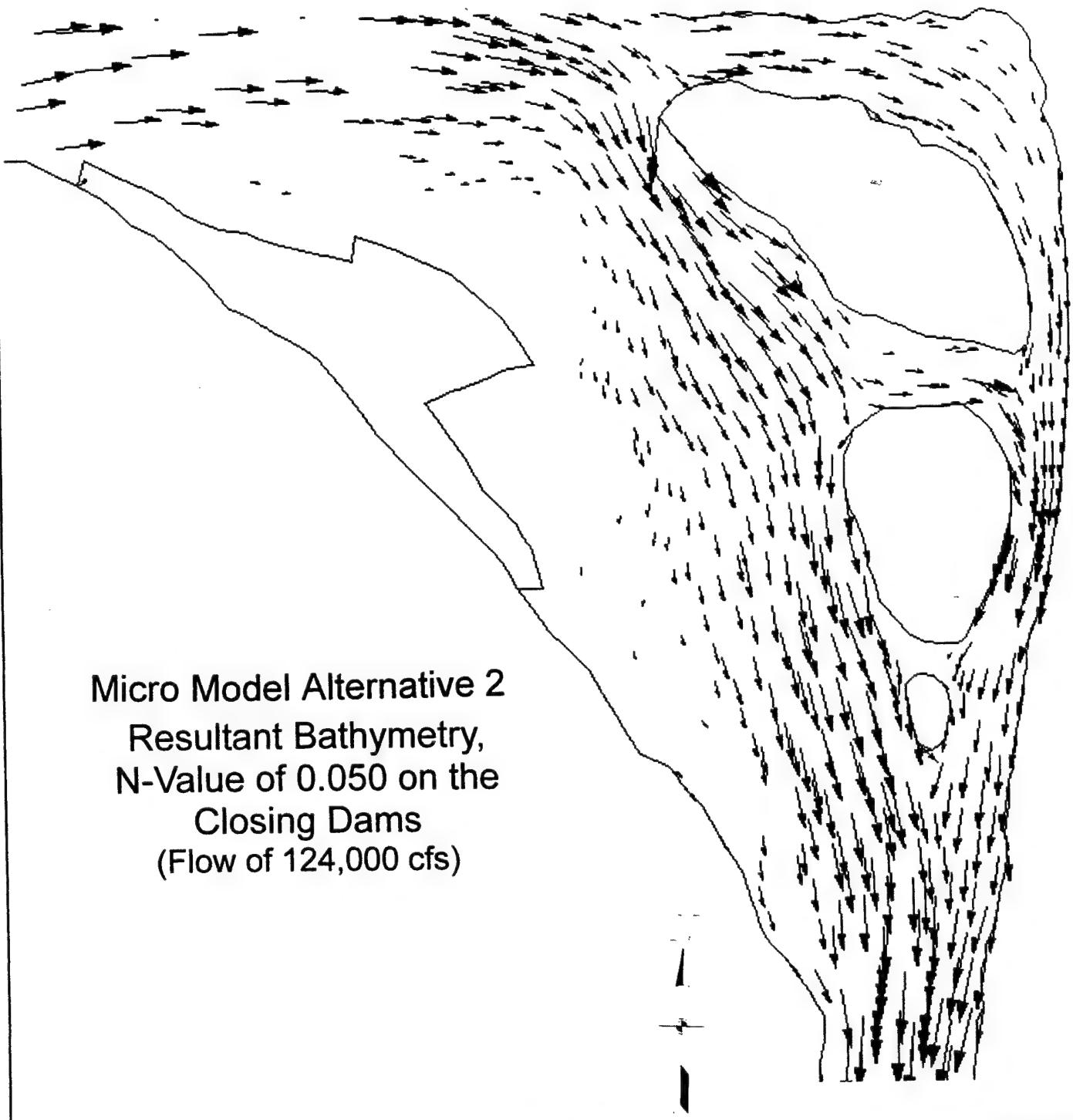
PREPARED BY: T. Katsberg
CHECKED BY: R. Denney

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

42



Micro Model Alternative 2
Resultant Bathymetry,
N-Value of 0.050 on the
Closing Dams
(Flow of 124,000 cfs)

Vector Velocity Scale:
→
5 feet/sec



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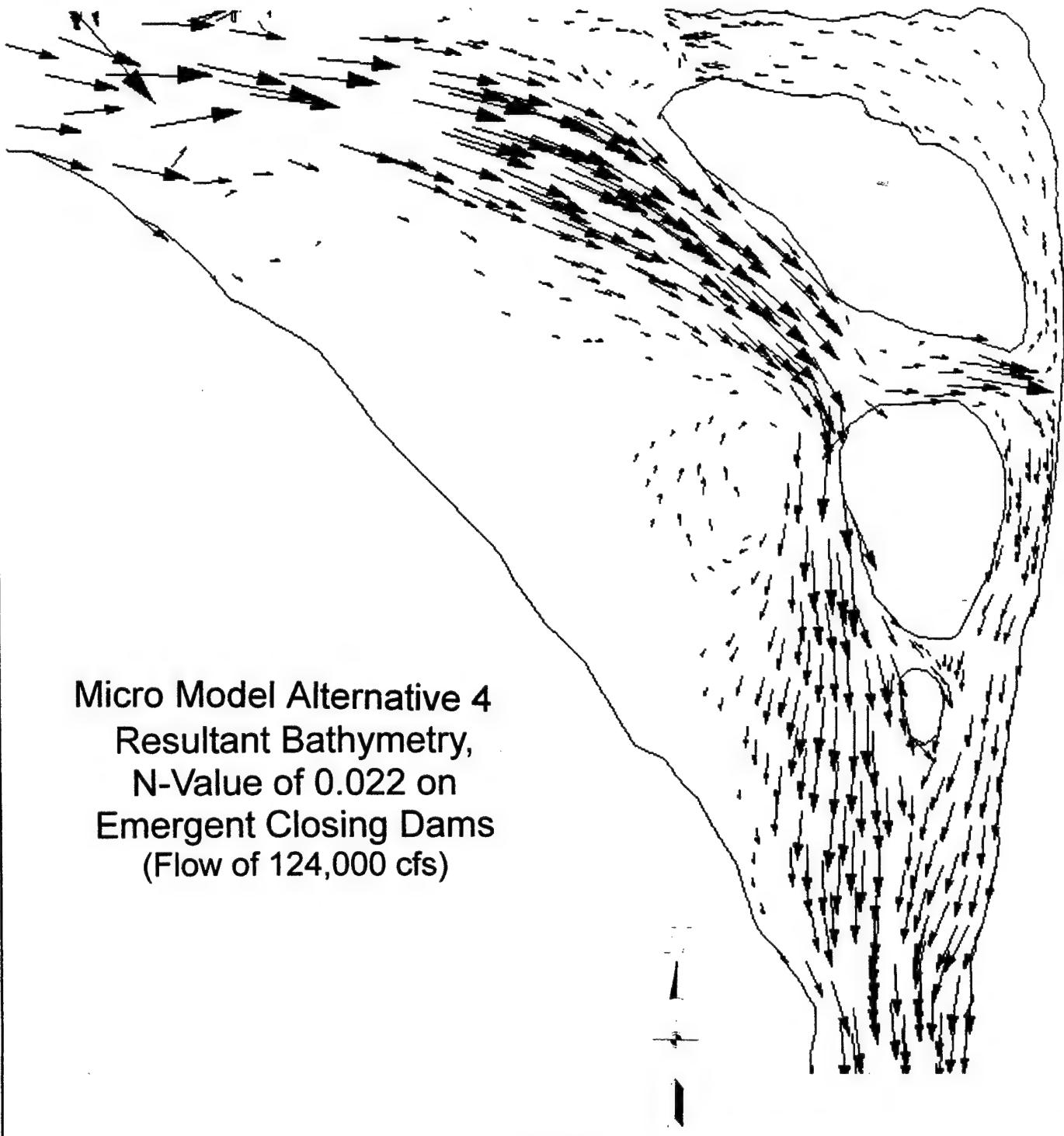
PREPARED BY: T. Krikeng
CHECKED BY: R. Devroy

Navigation Improvement Study of the Upper Mississippi River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

43



Micro Model Alternative 4
Resultant Bathymetry,
N-Value of 0.022 on
Emergent Closing Dams
(Flow of 124,000 cfs)

Vector Velocity Scale:
→
5 feet/sec



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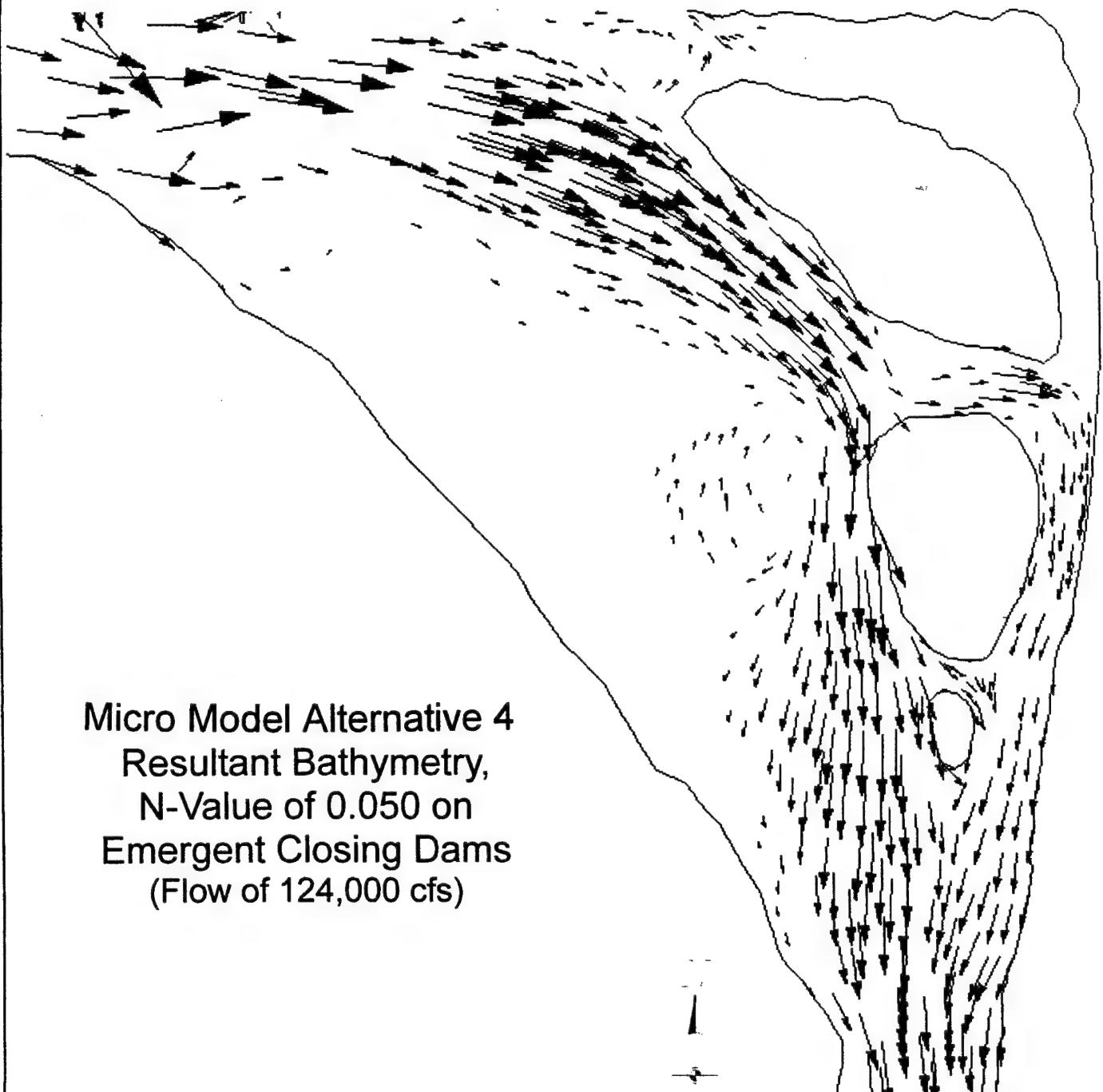
PREPARED BY: T. Krikeng
CHECKED BY: R. Devroye

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors.
SMS Model

PLATE NO.

44



Micro Model Alternative 4
Resultant Bathymetry,
N-Value of 0.050 on
Emergent Closing Dams
(Flow of 124,000 cfs)

Vector Velocity Scale:
→
5 feet/sec



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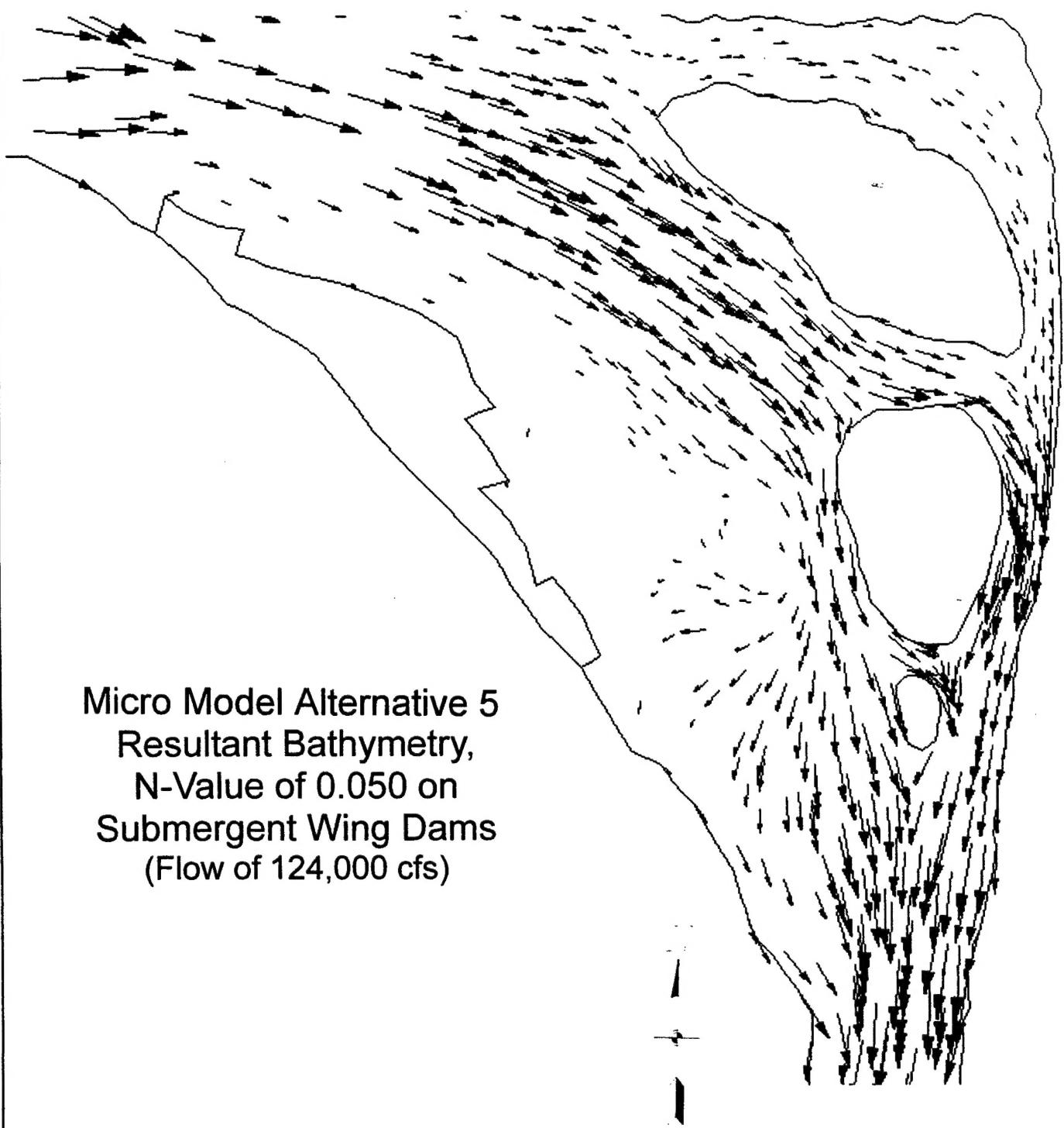
PREPARED BY: T. Krieng
CHECKED BY: R. Denney

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

45



**Micro Model Alternative 5
Resultant Bathymetry,
N-Value of 0.050 on
Submergent Wing Dams
(Flow of 124,000 cfs)**

Vector Velocity Scale:
→
5 feet/sec



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CHECKED BY: R. Devaney

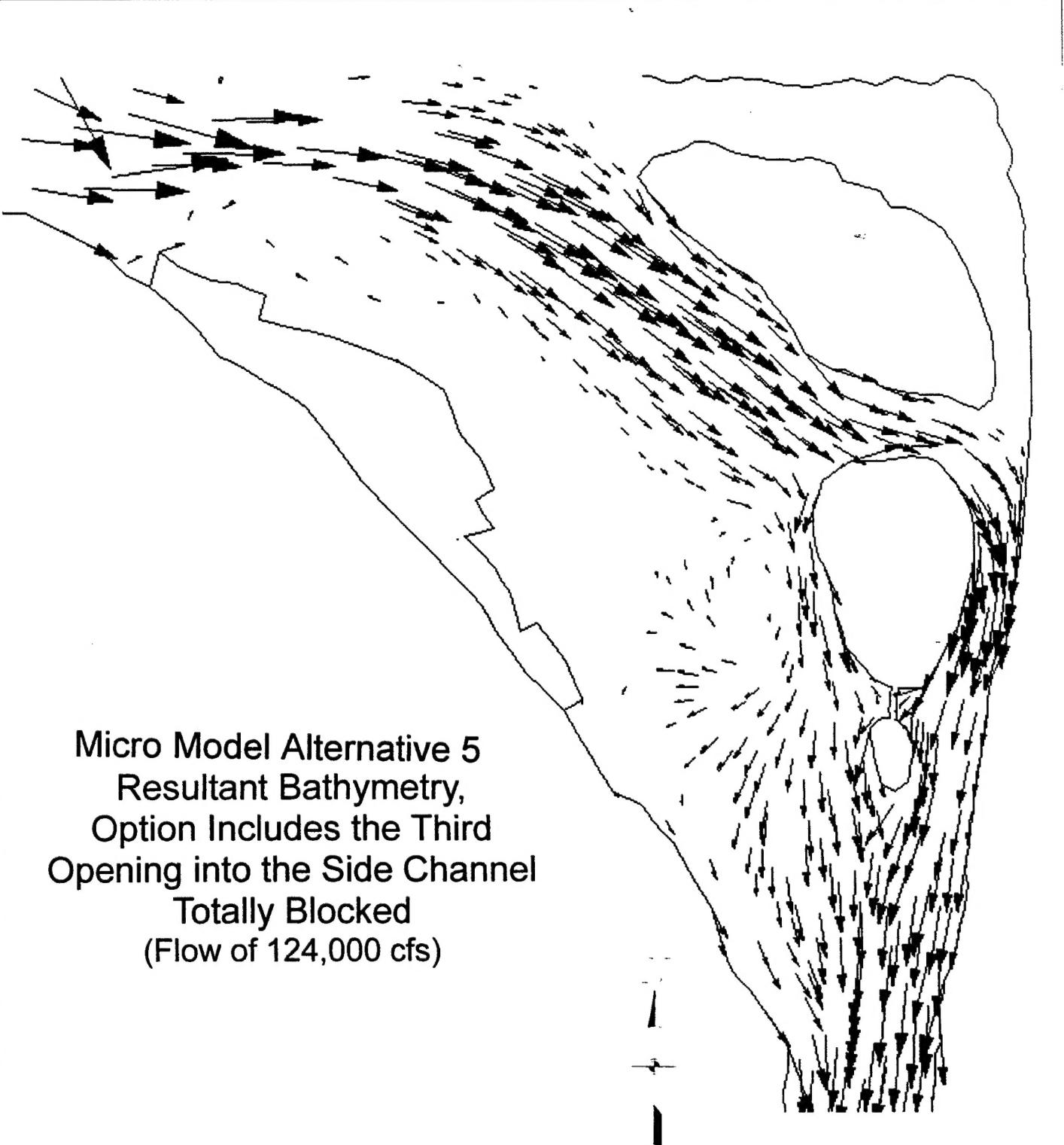
Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.

46

**Micro Model Alternative 5
Resultant Bathymetry,
Option Includes the Third
Opening into the Side Channel
Totally Blocked
(Flow of 124,000 cfs)**



Vector Velocity Scale:
→
5 feet/sec



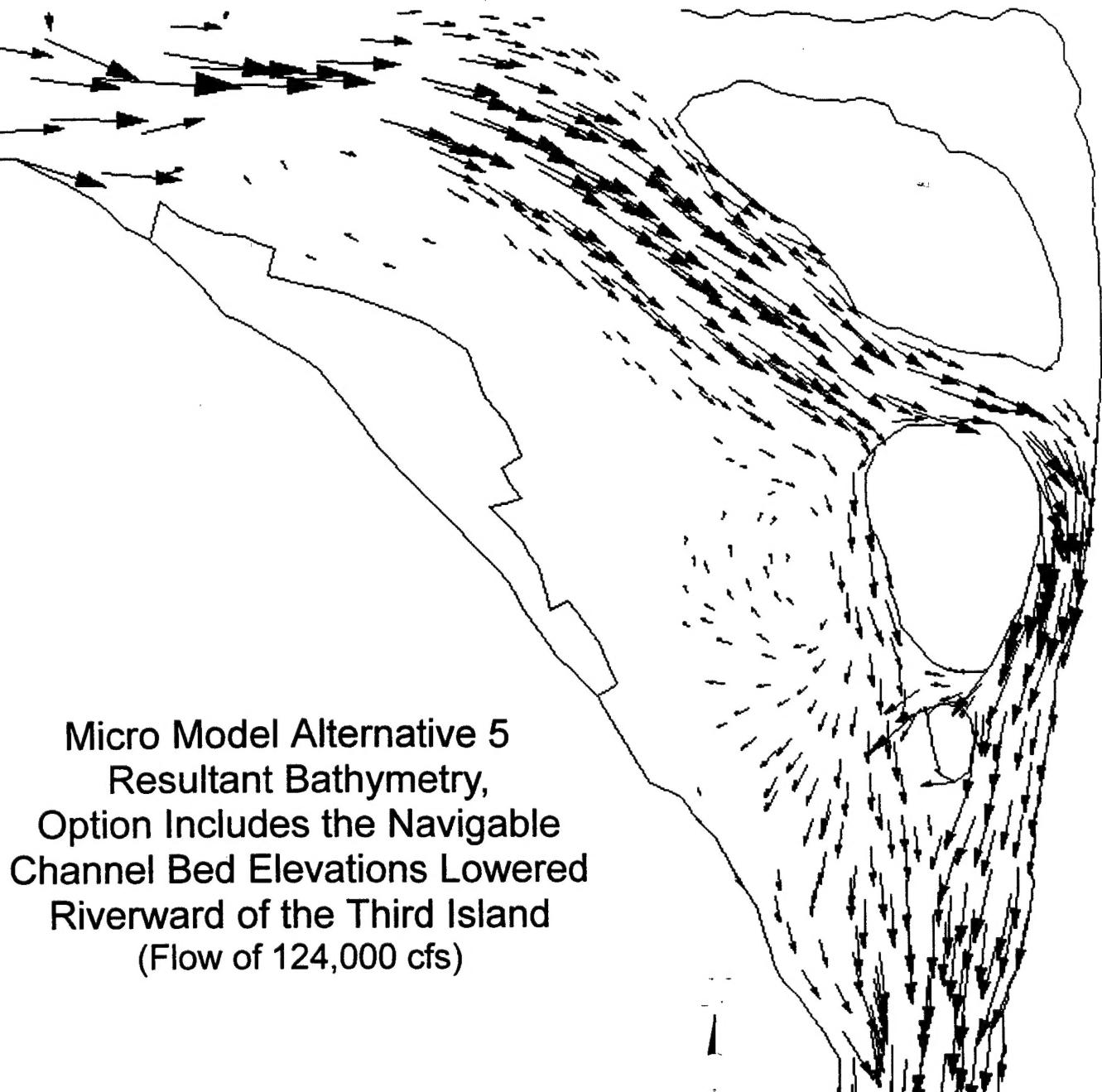
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PREPARED BY: T. Kiteeng
CHECKED BY: R. Dewey

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River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.



Micro Model Alternative 5
Resultant Bathymetry,
Option Includes the Navigable
Channel Bed Elevations Lowered
Riverward of the Third Island
(Flow of 124,000 cfs)



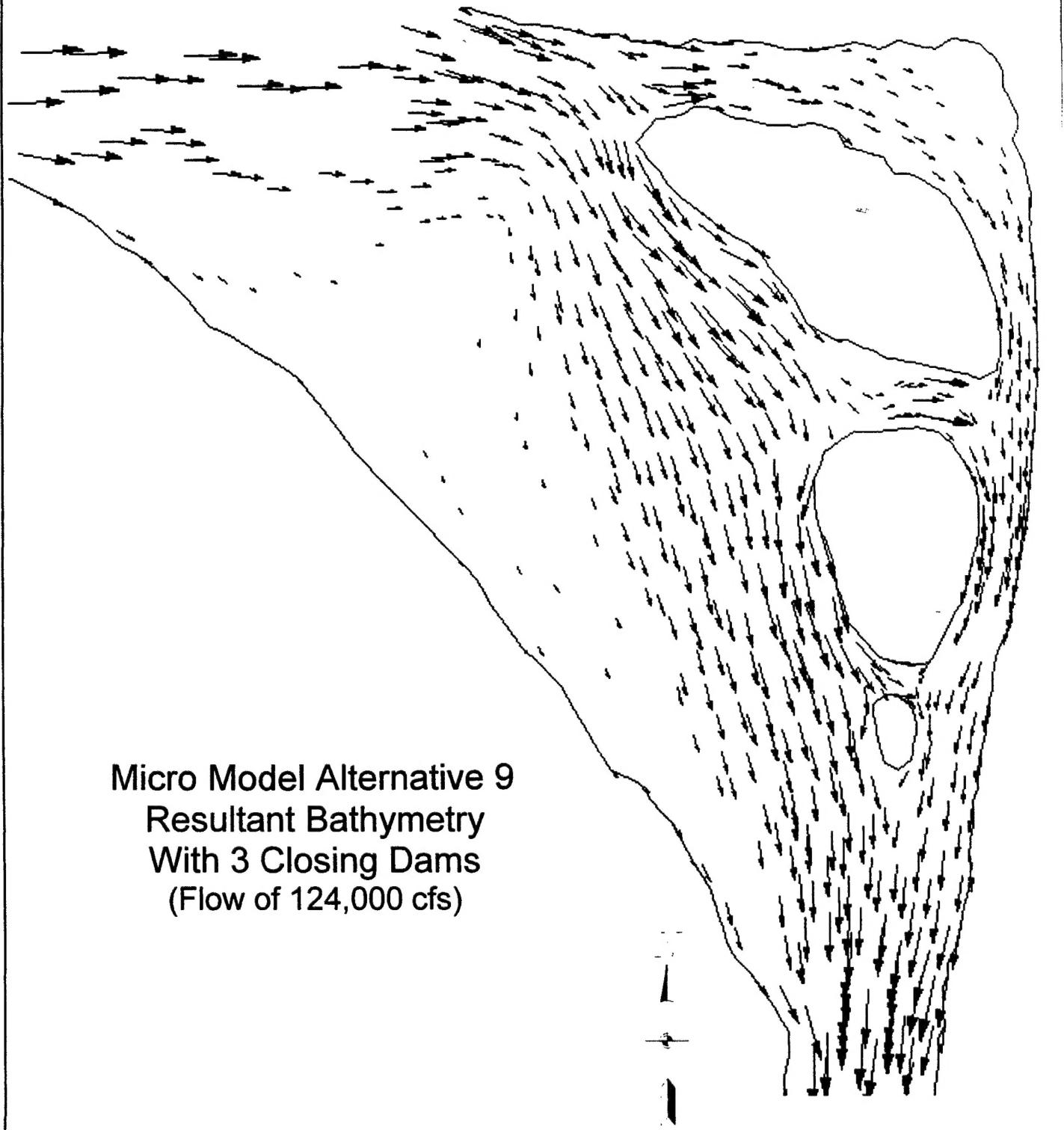
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CHECKED BY: R. Devroy

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model

PLATE NO.



**Micro Model Alternative 9
Resultant Bathymetry
With 3 Closing Dams
(Flow of 124,000 cfs)**

Vector Velocity Scale:
→
5 feet/sec



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ROCK ISLAND, ILLINOIS**

PREPARED BY: T. Krikeng
CHECKED BY: R. Davyoy

Navigation Improvement Study of the Upper Mississippi
River Near Savanna Bay, Pool 13

Plan View of Depth - Averaged Velocity Vectors,
SMS Model!

PLATE NO.